

ANT GUESTS FROM FIJI AND THE BRITISH SOLOMON ISLANDS.

By WILLIAM M. MANN,

U. S. Department of Agriculture, Bureau of Entomology.

The species hereafter described and noted were collected by the writer during 1915-1916, during an eighteen months' excursion to the South Seas as Sheldon Traveling Fellow of Harvard University.*

ORTHOPTERA. (Family Gryllidæ).

***Myrmecophila hebaridi* sp. nov.**

Female: Length 2.75-3 mm.

Form elongate and rather more slender than usual in the genus. Head brown, with a pair of yellow spots on the vertex. Thorax and first two abdominal segments lemon yellow; pronotum with a broadly interrupted fuscous band at middle; metanotum and first two abdominal segments with narrow, entire, transverse fuscous bands at base; remaining abdominal segments fuscous; the antennæ, tips of ovipositor and femora infuscated. Body and appendages with microscopic yellow pubescence; cerci with long and coarse hairs; thorax and abdomen above with scattered, squamiform hairs. Eyes flat, composed of 16-18 facets. Antennæ distinctly longer than the body and very slender. Pronotum slightly narrowed in front. Meso- and metanotum subequal in length and together slightly shorter than the pronotum. Cerci 9-jointed, rather stout, with joints 2-3-4 distinctly broader than long. Spines of posterior tibiae arranged as follows: On the dorso-external margin at apical third, three spines, the basal of which is a little longer than the third, but only half as long as the second; the dorso-internal margin with six spines, the basal, the third and the sixth much shorter than the others; tips with a pair of short ventral spines. Metatarsus with one stout spine.

Host: *Plagiolepis longipes* Jerd.

Described from a series taken with the host ant in the following localities: Fiji Islands, Somo Somo, Taviuni (type locality), Lakeba, Munia and Kabara in the Lau Archipelago; Saiaro, Viti Levu; Vunisea, Kadavu. Santa Cruz Archipelago: Graciosa Bay. Solomon Islands: Pamua and Wainoni Bay, San Cristoval.

* The figures were drawn by R. S. McEwen.

The squamiform hairs on the thorax are difficult to see and in many of the specimens have been rubbed off.

M. hebardi is close to *M. flavocincta* Wasmann, which lives with the same species of ant in India, but Rev. Wasmann has kindly compared the two and writes that in *hebardi* the joints of the cerci are much broader than in *flavocincta* and the latter species has yellow bands only on the pro- and mesonotum.

M. hebardi differs from the other species of *Myrmecophila* in confining itself to one host species. This probably accounts for the small amount of variation in size among the series before me. In a large collection of *Myrmecophila* the size of the crickets is seen to be in proportion to the size of the ant with which it lives. Small individuals are found in colonies of large ants, but in the collection before me, consisting of a series of nine species, it is very noticeable that the large-sized specimens of each species live with large host ants.

DIPTERA. (Family Syrphidæ).

***Bardistopus papuanum* gen. et sp. n.**

(Fig. 1.)

(Near *Microdon*).

Female: Length 6.5 mm. Form very slender; color black with the sides of front, 2nd and 3rd antennal joints, apex of scutellum, metanotum, broad lateral stripes on first gastric segment and legs (except tarsi) reddish brown, tarsi yellowish white. Frons at vertex more than a third as broad as head, not narrowed toward antennæ, subquadrate in shape and barely longer than broad, coarsely and in parts confluent punctate. Ocelli flat, situated on a tubercle which is bordered in front and at sides by a deep groove. Occiput truncate. Face straight in profile, sides with coarse, short, black hairs and yellow pollinose pubescence. Antennæ very long; arista twice as long as basal joint; basal joint about six times as long as 2nd joint; terminal joint about seven times as long as the basal, very gradually thickened toward apex, which is rounded. Thorax coarsely and irregularly punctate and with abundant, semirecumbent, coarse, black hairs. Scutellum transverse, rounded above, unarmed, anterior posterior borders nearly straight. Metanotum strongly transverse; with a sub-circular, broad, shallow depression at middle, microscopically striolate and without hairs. Gaster four times as long as broad, rugulose and punctate, moderately densely covered with semirecumbent, silky hairs. First segment margined at sides and elevated in front; second segment transversely impressed in front, the impression deep near sides; third segment as long as the first and second together. Wings hyaline, veins brown. Halteres yellowish white.

Pawa; Ugi, British Solomon Islands.

Described from two females (one without developed wings) reared from pupæ found on a leaf in a nest of *Technomyrmex albipes* F. Smith.

The puparium is 7 mm. long and 4 mm. broad; is not as convex as those of *Microdon* and brownish in color and not reticulated.

I have considered *papuanum* as generically distinct from *Microdon* because of the structure of the antennæ.

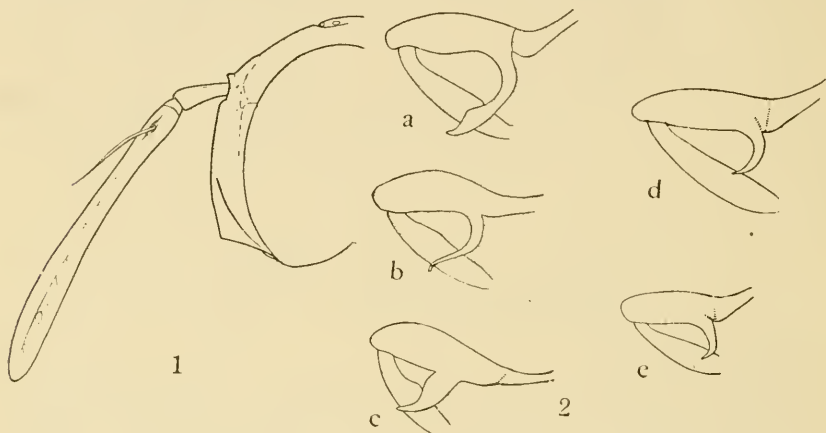


Fig. 1. *Bardistopus papuanum* gen. and sp. nov. Antenna and head from side.

Fig. 2. Middle femur, showing spines of a, *Fustiger vitiensis* sp. n.; b, *Fustiger raffrayi* sp. nov.; c, *Fustiger leverani* sp. nov.; d, *Fustiger wasmanni* sp. nov.; e, *Kaisia oceanica* sp. nov.

COLEOPTERA. (Family Pselaphidæ).
(Subfamily Clavigerinæ).

No species of this group have hitherto been recorded from the Melanesian region, but as they occur in nearly all parts of the world, it was not surprising to find some in a region as old zoologically as Fiji.

Five of the seven species that I found were taken at Nadarivatu, in the high mountains of Viti Levu, and four of them in company with the same host species, *Pheidole knowlesi* var. *extensus* Mann (mss.)*, a common species in the islands and one that nests beneath stones, a situation most favorable for the

* The ants named as host have been described in a paper on the ants of Fiji, now in the hands of the editor.

discovery of any inquilines in the nest. One was found with a Fijian species of *Iridomyrmex*, nesting in a *Myrmecodia* bulb and two with *Prenolepis bengalensis* Forel, an East Indian ant apparently well established in Fiji.

I am, with much doubt, placing five of my species in the genus *Fustiger*, though they are certainly exceedingly aberrant forms, and for two of the species I have considered it advisable to erect new genera.

***Fustiger vitiensis* sp. nov.**

(Fig. 2, a; Fig. 3.)

Male: Length 1.25–1.50 mm.

Head about twice as broad as long, broadest in front, shallowly impressed transversely between eyes, smooth in front and with shallow, foveolate punctures behind. Antennæ longer than head, the third joint narrow basally, gradually enlarged for two-thirds its length and then suddenly thickened so that the apical third is sub-campanulate; basal two-thirds densely punctate and much darker in color than apical third, which is smooth and shining. Prothorax longer than broad and a little more than half as broad in front as behind; sides convex. Sides of elytra feebly arcuate, posterior angles obliquely truncate, middle of border moderately concave. Abdomen with basal pit deep but not broad, lateral glandular swellings evenly rounded, only moderately excavated beneath; margins strong. Femora narrow basally, moderately swollen at apical two-thirds; the middle pair with thick spines which are broadened and subangulate in front of middle; the spines two-thirds as long as tibiae.

Brownish red. Hairs yellow, coarse and straight, moderately abundant on head, thorax, abdomen and antennæ; short and sparse on legs. Fasciculæ well developed.

Host: *Pheidole knowlesi* var. *extensus* Mann.

Described from a series taken at Nadarivatu, Viti, Levu, Fiji.

***Fustiger raffrayi* sp. nov.**

(Fig. 2, b.)

Near *Fustiger vitiensis* from which it differs in the following characters:

The prothorax is proportionately longer and more than twice as broad behind as in front. The femoral spines are slender and bisinuate and not enlarged and angulate on inner border. The head is not strongly punctate on the posterior half. The size (length 1 mm.) is slightly smaller.

Host: *Pheidole knowlesi* var. *extensus* Mann.

Described from several specimens taken at Vunisea, Kadavu, Fiji.

Fustiger cribratus sp. nov.

(Fig. 4.)

Male: Length 1.10 mm.

Dark brown, almost black. Head prothorax and elytra finely cribrately punctate and with microscopic recumbent hairs; abdomen, in addition to similar minute hairs with six long, fine and erect hairs.

Head less than twice as long as broad, as broad behind eyes as in front. Antennæ twice as long as head, slender, clavate and compressed apically. Prothorax a little longer than broad, sides rather strongly

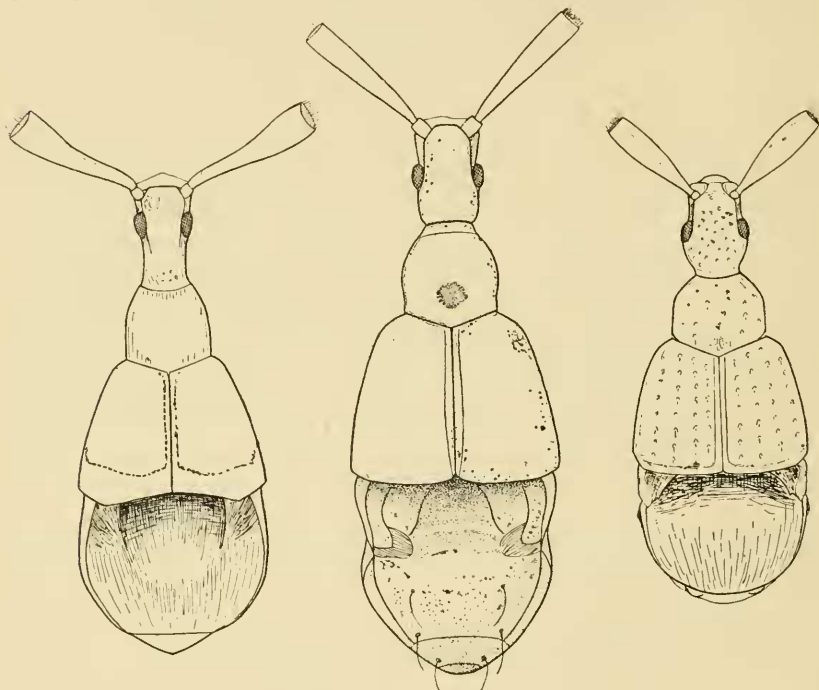


Fig. 3.

Fustiger vitiensis.

Fig. 4.

Fustiger cribratus.

Fig. 5.

Fustiger levuanus.

convex at middle, straight behind, dorsal surface with a strong circular impression at middle near base. Elytra together distinctly longer than broad, sides convex, apical corners rounded, sutural striæ strong. Abdomen narrow; pit short and deep with strongly sloping posterior surface, lateral anterior lobes elongate, well defined, excavated beneath, with fascicle at the tip composed of short hairs; posterior portion of abdomen convex, strongly margined at sides. Anterior femora strongly swollen at middle of inner edge. Spines of middle femora thick basally, then slender and acuminate apically, strongly curved.

Viti Levu: Nadarivatu.

Host: *Iridomyrmex sororis* Mann.

Described from two males taken with the host ant, in a *Myrmecodia* bulb.

The elongate, slender antennæ, the regular punctation and the dark color are characteristic of *cribratus*.

Fustiger levuanus sp. nov.

(Fig. 2, c; Fig. 5.)

Male: Length 1.25 mm.

Reddish brown. Head, prothorax and elytra with rather stiff, sub-erect hairs; abdominal fasciculæ very small. Head less than twice as long as broad, widest behind eyes, coarsely, foveolately punctate. Antennæ about as long as head, second joint clavate, compressed at tips, uniformly punctate. Prothorax broader than long, broadest behind eyes, sides convex, surface foveolately punctate. Elytra a little broadest behind, sides convex, posterior corners rounded, surface with rather strong and regular foveolate punctures which become finer on apical third. Basal pit of abdomen not deep; barely one-third as long as abdomen; the surface posterior to the pit very strongly convex. Femora incrassate, the spines about half as long as tibiæ, stout basally and strongly curved. Disc of metasternum impressed, first gastric segment barely as long as second and third together.

Koro Vatu, Viti Levu, Fiji.

Host: *Prenolepis bengalensis*. Forel.

Nadarimanu gen. nov.

NOTE.—Near *Fustiger*, but differing in the structure of the abdomen, which is very strongly margined for its entire length and instead of a fasciculate inflation at the anterior end has a second, rounded margin which bears an elongate brush of hairs. Abdominal pit very broad, the posterior face flat and sloping and the non-excavated posterior part of the first segment reduced to a convex ridge. Type *alewa*.

Nadarimanu alewa sp. nov.

(Fig. 6*)

Female: Length 1.75 mm.

Reddish brown. Hairs rather coarse, curved, semirecumbent, abundant on head, body and appendages. Head, prothorax and elytra with strong, foveolate punctures which are largest and more shallow on the elytra. Abdomen very finely and sparsely punctate. Head about twice as long as broad, as broad at anterior border as behind eyes, not impressed above. Antennæ much longer than head, the third joint rather narrowly clavate and compressed. Prothorax a little longer than broad, narrowed in front, sides convex at anterior half, nearly straight behind; surface feebly depressed at base. Elytra together broader than

* The antennæ are more sinuate than shown in the figure.

long, sides feebly convex, posterior angles sharp, border bisinuate; sutural striæ strong. First abdominal segment strongly margined for its entire length, without dilations, but with a second rounded margin which extends along the sides of the pit, this bearing along the sides a long, thin fascicle; pit very broad and shallow, extending four-fifths the length of the segment; its posterior three-fourths, very flat and sloping. First ventral segment longer than the following three together. Ventral surface of head and thorax with very coarse punctures, legs stout, femora enlarged and moderately compressed.

Host: *Pheidole knowlesi* var. *extensus* Mann.

Described from one female taken on Mt. Victoria, Viti Levu, Fiji.

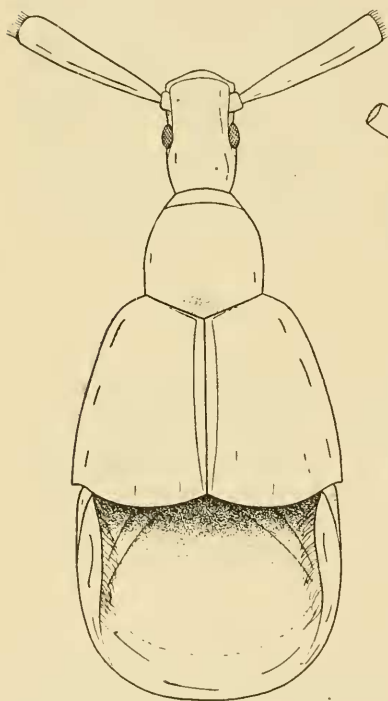


Fig. 6.
Nadarimanu alewa.

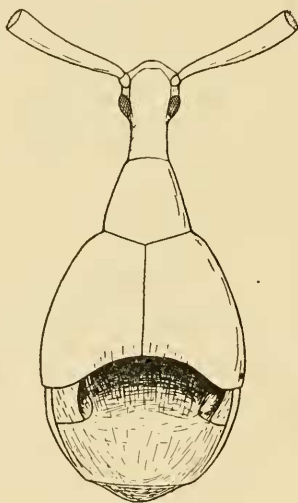


Fig. 7.
Fustiger wasmanni.

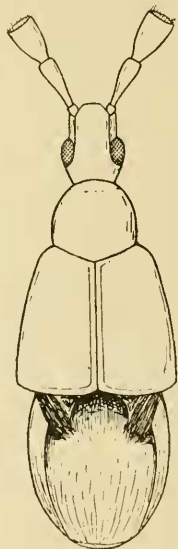


Fig. 8.
Kaisia oceanica.

***Fustiger wasmanni* sp. nov.**
(Fig. 2, d; Fig. 7.)

Male: Length 1.25 mm.

Head constricted behind eyes into a neck, which is broadest basally, about two-thirds as broad and a little shorter than the anterior portion; the ventral surface strongly longitudinally impressed at middle with the

sides roundly margined. Antennæ distinctly longer than head. First joint smaller than the second, second joint transverse broader than basal portion of third. Third joint thick, markedly enlarged at apical third, circular and truncate at apex. Prothorax broad basally, narrowed in front, with nearly straight sides. Elytra together much broader than long, sides feebly arcuate, posterior corners narrowly rounded, the posterior margin truncate at sides and deeply concave at middle. Abdomen broad, the basal fovea extremely deep, grooved at bottom; dorsal surface posterior to pit strongly concave; lateral swellings large, deeply excavated and bearing extremely thin fasciculæ; side margins acute at anterior third, less so behind. Ventral surface of metathorax broadly rounded. First abdominal segment much longer than the following three segments together. Legs slender, the middle femora with short spines which are thick basally, narrowed apically, strongly curved and about one-third as long as tibiæ.

Yellow brown, shining, thorax and abdomen sparsely, regularly punctate. Head in front of eyes sparsely, rather coarsely punctate, posteriorly with strong, elongated and confluent foveolate punctures. Hairs yellow, coarse, strongly curved and moderately abundant on antennæ.

Host: *Pheidole knowlesi* var. *extensus* Mann.

Described from a unique male taken at Nadarivatu, Viti Levu, Fiji.

The broad, oval form, the shape of the head, the thickly margined inferior sides of the neck and the exceedingly profound abdominal pit are very distinctive.

Kaisia gen. nov.

NOTE.—Kaisi (Fijian) = slave.

Form elongate. Head longer than broad. Eyes well developed. Antennæ four-jointed, the first joint very small, the third longer than the fourth which is truncate apically. Prothorax broad, strongly impressed at base. Elytra elongate. Abdomen small, with a deep, narrow pit in front and well developed lateral swellings and fasciculæ. Metasternum with a pair of broad foveæ which are separated by a longitudinal ridge of pubescence; apical margin with a pair of strong vertical spines. Type *oceanica*.

Kaisia oceanica sp. nov.

(Fig. 2, c; Fig. 8.)

Male: Length 1 mm.

Reddish brown. Hairs rather strong and sub-erect, regularly arranged and moderately abundant on head, pronotum elytra and abdomen. Fasciculæ of abdomen well developed, dense. Head less than twice as long as broad, as broad in front as behind, widest behind eyes, not impressed above; rugosely punctate. Eyes large and convex, sit-

uated at sides of head a little behind the middle. Antennæ a little longer than head, with three distinct joints; first joint small; second joint clavate, one and one-third times as long as the terminal from which it is separated by a strong constriction, punctate; third joint smooth and shining, nearly twice as broad as the second, broadest at apex, tip truncate. Prothorax slightly broader than long with a strong, elongate impression at middle of basal half, punctate similarly to head. Elytra together longer than broad, posterior corners broadly rounded, border shallowly concave at middle; coarsely shallowly and rather



Fig. 9. *Liphya brassolis* Westw. larva, dorsal and ventral views.

sparsely punctate. Abdomen distinctly narrower than elytra; first segment with strong lateral margin; anterior glandular processes moderately developed; pit small, occupying less than one-third of the surface, transverse, grooved at bottom. Femora of uniform thickness, armed basally with a rather thick spine, a little less than half as long as the femur, nearly straight at basal two-thirds, then bent at a rounded obtuse angle. Mesosternum apically with a pair of strong elongate, triangular spines in front of inner margin of posterior coxi. First ventral segment as long as the second and third together.

Host: *Prenolepis bengalensis* Forel.

Described from two specimens taken with a colony of the host ant beneath a stone on the Tai Levu Coast, Viti Levu, Fiji.

LEPIDOPTERA. (Family Lycaenidæ).

Liphyra brassolis Westw.

(Fig. 9.)

Several individuals of the singular, Dipterous-like larvæ of this species were found at Tulagi, British Solomon Islands, in the leaf and silk nests of *Oecophylla smaragdina* var. *subnitida* Emery. *L. brassolis* is found from Australia to India. It feeds on the larvæ of the host ant. The latter are unable to harm it, because of the heavy corneous larval skin, the edges of which fit closely to the leaf. At the time of pupation the larval skin becomes modified into a cocoon, within which the quiescent stage is passed; a condition analogous to that of the cyclorrhaph Diptera. When the adult emerges it is densely covered with scales which come off if the ants become aggressive and distracts their attention while the *Liphyra* escapes from the nest.

The larvæ much resemble those of *Microdon*, and glide along in a similar manner, though very much faster.

* Dodd (Ent. 35, pp. 153-156, 1906) has given an interesting account of the habits, and Chapman (Ent. 35, pp. 225-228 and 252-255) of the development of specimens from Queensland.